SY 690-0535 105,263

Clayton
ENVIRONMENTAL
CONSULTANTS

Workplan
for a
Clarifier and Sump Investigation
at
The Stoody Company
City of Industry, California

Clayton Project No. 32065.00
December 20, 1990

Pacific Operations
Los Angeles

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ENVIRONMENTAL
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Workplan for a Clarifier and Sump Investigation at The Stoody Company City of Industry, California

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1.0 INTRODUCTION

This document is a workplan prepared by Clayton Environmental Consultants, Inc. (Clayton) and The Stoody Company as requested by the California Regional Water Quality Control Board, Los Angeles Region (CRWQCB). It describes field, laboratory, and office activities associated with a clarifier and sump investigation for the Stoody Company facility located at 16425 Gale Avenue in the City of Industry, California (Figure 1).

1.1 BACKGROUND

In response to a letter from the CRWQCB dated October 22, 1990, Stoody Company contracted Clayton to prepare this workplan to perform additional investigative work at the Stoody facility (Appendix A; File No. AB105.263). The work was performed in accordance with the Terms and Conditions described in Clayton's Proposal No. 90-SEE-148, dated October 29, 1990. Written authorization to proceed was received on October 29, 1990.

At the present time, Stoody has installed four groundwater monitoring wells at their facility, and drilled and sampled nine other soil boreholes around their premises. At least five of these soil boreholes were shallow and placed near the clarifier (2) and the sump/drum storage area (3). Quarterly groundwater sampling and analysis has been performed for the last year.

Early in the 1990 year, Stoody performed investigative boring and soil sampling near the clarifier and sump area. Additionally, the clarifier was emptied of liquid and solid waste and the interior was pressure washed and examined for visible cracks or other indications of points of leakage in the presence of a CRWQCB representative (Appendix B). No obvious points of leakage or signs of containment failure were observed.

1.2 OBJECTIVES

As outlined in the CRWQCB correspondence, the objective of this subsurface investigation is to:

- Further assess the extent of soil and groundwater contamination at the Stoody facility in the vicinity of the clarifier and sump

Past objectives for soil investigations at Stoody have concentrated on evaluating whether or not subsurface contamination exists and at what levels.

The investigation proposed in this workplan takes the analysis one step further. This step is to define the lateral and vertical extent of contamination around the clarifier and sump.

It is important to be able to first measure the approximate extent of contaminated soil so that the appropriate remediation processes, equipment, and budgeting can be set up.

1.3 SCOPE OF WORK

The following scope of work is presented for the clarifier and sump investigation and is described more completely in the following sections.

1.3.1 Vadose Zone Investigation

- Drill and sample three boreholes around the sump located in the former sump/barrel storage area, and four boreholes around the clarifier (Figures 2 and 3). The boreholes will be drilled to a depth of 30 feet or until groundwater is reached. Samples will be collected every 5 feet starting just below the ground surface. Depth to water at the site varies from 27 to 29 feet as measured in onsite monitoring wells.

1.3.2 Groundwater Investigation

- Drill and sample one shallow borehole immediately downgradient of the clarifier. This borehole will be one of the four boreholes drilled near the clarifier. Construct a groundwater monitoring well in the borehole, screened to intercept the first occurrence of groundwater, to assess water quality immediately downgradient of the clarifier. The borehole will extend to 20 feet below groundwater.

- Properly seal and preserve soil and groundwater samples, and transport them to a state certified laboratory for analysis using standard chain-of-custody procedures.

- Develop the monitoring well at least two days after well installation. Obtain groundwater samples four to seven days after well development.

- Analyze soil and groundwater samples using various EPA methods (2-week turnaround time).

- Evaluate field data and laboratory analytical results.

- Prepare a report summarizing activities, and submit it with recommendations to the CRWQCB.

2.0 VADOSE ZONE INVESTIGATION

The vadose zone investigation is designed to assess the lateral and vertical extent of contamination by chemical compounds previously found in the soil in the areas around the sump and clarifier.

A total of seven soil boreholes will be drilled on the northeast side of the facility (Figures 2 and 3); four near the clarifier and three near the sump.

3.0 GROUNDWATER INVESTIGATION

A shallow groundwater monitoring well will be installed immediately downgradient of the clarifier to assess the quality of the shallow groundwater. The shallow well described in this section will be composed of 4-inch stainless steel and PVC materials. Specific information on construction of the well is discussed in Section 5.0.

4.0 VADOSE ZONE INVESTIGATION PROCEDURES

During the vadose zone investigation, a hollow-stem auger drill rig will be used to collect soil samples at the surface (1-foot below grade), at 5-foot intervals, and at significant changes in lithology or soil type, until the termination depth of the borehole is reached or groundwater is encountered. No soil sampling below groundwater will be attempted. Soil sampling and drilling techniques generally follow Department of Health Services, California Site Mitigation Decision Tree guidelines of May 1986.

A modified California split-barrel sampler with three 6-inch long, 2.5-inch outside diameter brass sleeves will be used to acquire relatively undisturbed samples at the required depths. The second brass liner will be sealed with aluminum foil, plastic end caps, and electrical tape. It will then be labeled, inserted in a self-sealing plastic bag, and placed on ice in an ice chest for transport to a California state-certified laboratory for analysis. Standard chain-of-custody procedures will be followed.

The boreholes and soil samples will be described by a Clayton geologist under the supervision of a California Registered Geologist using the Unified Soil Classification System (USCS). Borehole logs will be prepared to document these descriptions.

A portion of the soil sample from the first brass liner will be subjected to a field evaluation of volatile organic compounds using an OVA headspace technique. The headspace analysis will be performed by half-filling an 8-ounce glass jar with soil and capping the jar with aluminum foil and a Teflon™-lined lid. The jar will be allowed to volatilize in direct sunlight or other warm location for a minimum of 30 minutes. After the time has elapsed the lid will be removed and the sensor tip of a Photovac™ tip meter (PID) will be inserted through the aluminum foil covering the mouth of the jar. The level of VOCs in the jar headspace will be measured with the PID meter and recorded on the borehole logs. The tip meter will also be used to measure breathing zone and borehole concentrations of VOCs during drilling.

Drill cuttings will be placed in Class 17-H 55-gallon drums for disposal by Stoody. The boreholes will be backfilled to grade using the augers as a tremie pipe with a volclay-bentonite grout mixture.

5.0 GROUNDWATER INVESTIGATION PROCEDURES

5.1 INSTALLATION OF A SHALLOW MONITORING WELL

A groundwater monitoring well will be installed in a borehole immediately downgradient of the clarifier. The borehole will be drilled and soils sampled as described in Section 4.0 using an 11-inch hollow-stem auger. Competent clay layers below the groundwater table, that is layers 5-feet thick or greater, will not be penetrated during drilling. The shallow borehole will be advanced using a hollow-stem auger drilling technique to groundwater and extended 20 additional feet. Soil sampling at 10-foot intervals will be attempted after groundwater is reached. It is estimated that depth to water will be 27 to 29 feet; total depth of the well would then be 47 to 49 feet.

When the auger tool encounters groundwater, a final sample will be taken and the drill auger advanced. When the borehole reaches a depth of 20 feet below the groundwater, a 4-inch I.D., threaded stainless steel well casing will be lowered into the annular space of the augers. Thirty feet of machined-slotted stainless steel well screen with a threaded or welded end plug at the bottom will be suspended in the borehole inside the augers so that 20 feet of screen is below the groundwater level and 10 feet is above. Blank casing will be attached to the screen and will extend from the top of the well screen to the surface. Any well casing below groundwater will be stainless steel; casing above groundwater will be Schedule 40 PVC.

With the augers in the borehole, the selected sand filter pack will be hand-poured into the annular space of the auger, between the auger and the well casing, to place a 1/2-foot to 1-foot thick layer of filter pack sand at the bottom of the borehole. Additional filter pack sand will be hand-poured in the same manner at a rate not to exceed 1 pound per second. The filter pack material will be placed so that it extends at least 18 inches to 2 feet above the top of the well screen. After filter pack installation, the well will be partially developed with a surge block to settle the filter pack and minimize the potential for bridging. Additional filter pack will be added if settlement occurs.

A 3-foot thick layer of 1/4- or 1/2-inch diameter bentonite pellets or crushed bentonite will be hand-placed on top of the filter pack as a well seal. The pellets will be hydrated as necessary with small quantities of deionized water (1 to 2 gallons per 6-inch layer). A volclay-bentonite grout will be placed on top of the bentonite seal, using the auger as a tremie pipe after the bentonite pellets have hydrated for at least 30 minutes. The wellhead will be capped with a vented PVC slip cap. A locking, flush-mounted, wellhead box will be imbedded in a 2-foot thick surface layer of concrete to protect the wellhead.

One sieve analysis will be performed on a soil sample taken from the well borehole. California Decision Tree, Johnson well screen design, and field observations and experience will be used to design the well screen slot size and filter pack for the well. Based on past well installations at the site, a 0.01-inch slot size and a Number 2 Monterey-type sand filter pack is likely appropriate.

5.2 DEVELOPMENT AND SAMPLING OF MONITORING WELL

Well development and groundwater sampling will occur after the well is installed. Well development will occur 48 to 72 hours after well installation. Groundwater sampling will be performed 4 to 7 days after well development. The well will be developed using a bailer and surge block. A small submersible pump may also be used for water removal.

Initially, the well will be bailed with a bottom-fill-type steel bailer to remove any sediment present in the bottom of the well. The screened interval in each well will then be surged using a surge block. The block will be raised and lowered about 10 times against the screen for each 3-foot interval. Following surging, the wells will be bailed again, using a bottom-fill-type steel bailer to remove sediment brought into the wellbore by the surging.

After bailing and surging, three to five well volumes of water will be removed from the well, either by PVC bailer or submersible pump. Water quality parameters (pH, temperature, electrical conductivity) will be measured during bailing or pumping. Development will be considered complete when water quality parameters have stabilized to within ± 10 percent of the values of the previous well volume removed, and the well is producing water relatively free of suspended sediment.

Prior to groundwater sampling, three casing volumes of water will be removed from the well. It is planned to use a small submersible pump to remove the water. A Teflon™ or Lexan™ bailer will be used to take the water samples. Water quality parameters (pH, temperature, electrical conductivity) will be measured at least after every casing volume of water is removed. Water samples will be taken after the three casing volumes of water have been removed and the water quality parameters stabilize to within ± 10 percent of the values measured from the previous casing volume.

Water samples will be collected using appropriate containers and preservatives according to EPA sampling and preservation guidelines (1984, 40 CFR136). Labeled samples will be wrapped in shock-absorbing materials, and placed on ice in a portable cooler. They will be transported to the testing laboratory for analysis (2-week turnaround time) under standard chain-of-custody procedures.

Water removed from the wells during development and sampling will be placed in Class 17, 55-gallon drums appropriate for water collection. Disposal of the drum contents is the responsibility of Stoody.

5.3 PERMITS AND SURVEYING

The monitoring well installed at the site will be properly permitted with the Los Angeles County Department of Health Services and will be located by a licensed surveyor after installation.

The well permit process may require a site visit by a county inspector prior to approval. This may increase the permit procurement time to at least one week.

The elevation of the top of the well casing will be surveyed relative to sea level from the previously established groundwater well network. The wellhead location will be provided using California coordinates. The new well location will be incorporated into the existing well survey network.

6.0 DECONTAMINATION OF DRILLING AND SAMPLING EQUIPMENT

Equipment used during the field investigations will be decontaminated to minimize the potential for cross contamination from location to location. The downhole drill rig equipment, surge blocks and steel bailers will be steam-cleaned prior to use in the well. Soil samplers, brass liners, and bailers will be washed in a detergent solution, rinsed twice in potable water, and final rinsed in deionized water. Well casing and screen will be either steam-cleaned and wrapped in plastic sheeting prior to delivery on site or will be steam-cleaned onsite prior to installation in the borehole.

7.0 LABORATORY ANALYSIS PROGRAM

The laboratory analysis program includes several EPA method analyses. The work will be performed at Clayton's Pleasanton, California state-certified laboratory, or at the West Coast Analytical services state-certified laboratory in Santa Fe Springs, California.

Soil samples from the boreholes will be subjected to standard EPA Method 8240 analysis for volatile organic compounds, and EPA Method 418.1 for total petroleum hydrocarbons (Table 1). One sample per borehole will be collected for metals analysis using the California Title 22 TTLC and the STLC for nickel, copper and chromium VI.

Prior to purging the new well, a groundwater sample will be obtained for total petroleum hydrocarbon (TPH) analysis using EPA Method 418.1. The groundwater samples from the new well will be analyzed for volatile organic compounds using EPA Method 524.2.

If a 5-foot thick competent clay layer is encountered during drilling, a sample will be taken and drilling will stop. The soil sample will be preserved and handled as discussed previously. It will be subjected to several chemical and physical tests including EPA Method 8240, fine sieve analysis (sand) hydrometer test (silt and clay), and a falling head permeability test using the American Society of Testing and Materials (ASTM) D2434 method.

8.0 REPORT PREPARATION

A clarifier and sump investigation report will be prepared to document the activities performed in this workplan. It will consist of a summary of field activities performed, laboratory analysis reports, borehole logs, well construction details, water quality parameter data, chain-of-custody forms, plot plan, and location map.

9.0 ESTIMATED SCHEDULE OF ACTIVITIES

The estimated schedule of activities is on Figure 4. It is estimated that approval of this workplan will require two weeks and that a well permit can be acquired from the Los Angeles County Department of Health Services in one week. The program is estimated to be complete in 8 to 10 weeks after approval of the workplan and receipt of permission to install the monitoring well.

This report submitted by: Holly A. Smith

for Robert Zicker
Associate Environmental Consultant

This report reviewed by: David H. Randell

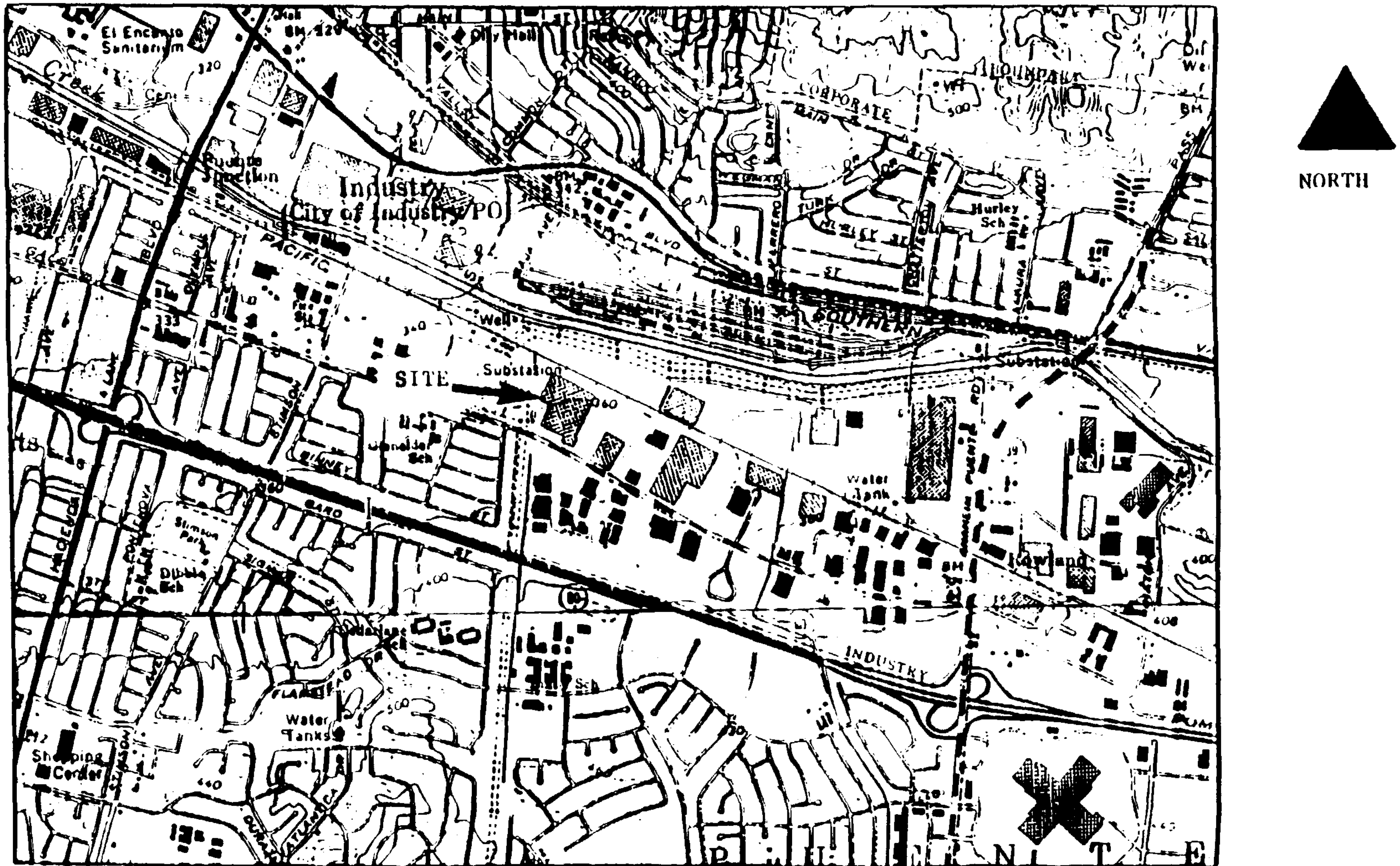
David Randell, R.G.
Supervisor Environmental Engineering
Pacific Operations

December 20, 1990

TABLE 1

PROPOSED LABORATORY ANALYSES

Area/Task	EPA Or Other Test Method			
	8240	418.1	Metals	524.2
Clarifier				
Monitoring Well (1)				
Soil	7	7	1	NA
Water	NA	2	1	1
Boreholes (3)	21	21	3	NA
Sump				
Boreholes (3)				
Soil	21	21	3	NA
Clay	Sieve, hydrometer, falling head			

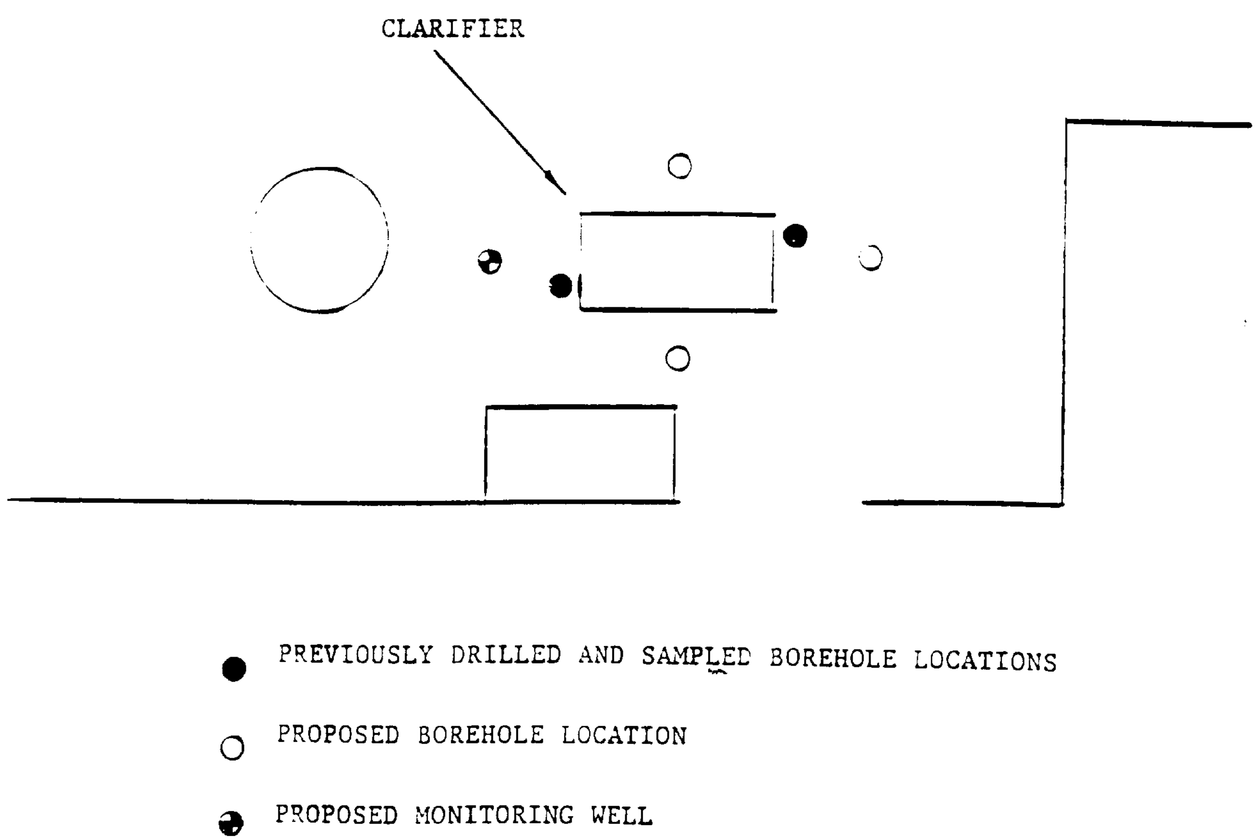


Basemap taken from U.S.G.S. 1966 Baldwin Park Quadrangle (Photorevised 1981), 1964 La Habra Quadrangle (Photorevised 1981), California 7.5 minute series (topographic).

0 .2 .4 mile

SCALE: 1 inch = .4 mile

Clayton Environmental Consultants, Inc.		Figure
SITE LOCATION AND TOPOGRAPHY		1
Stoody Company	Clayton Project No. 32065.00	12/90

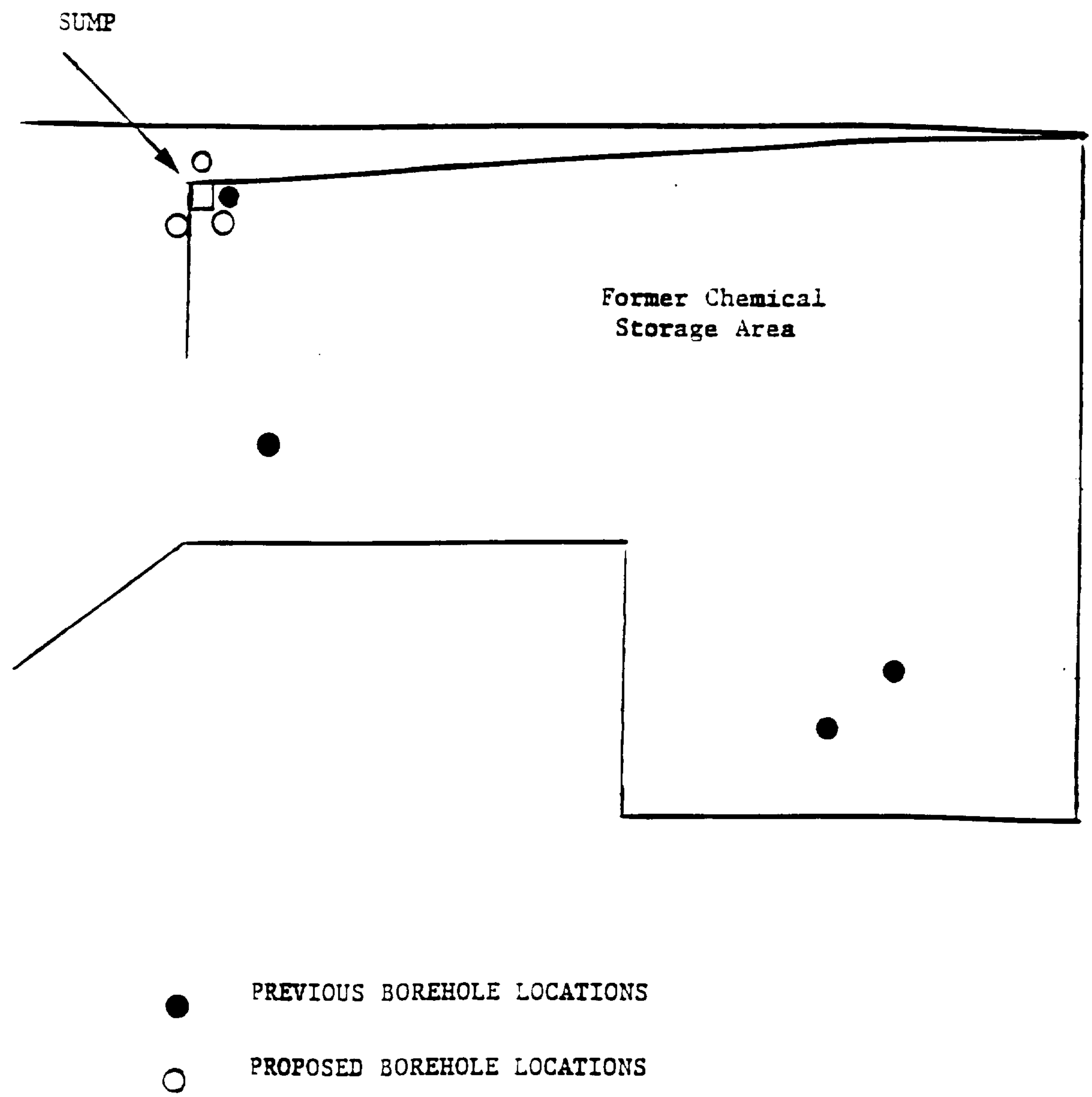


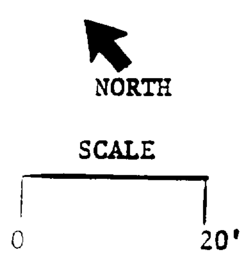
NORTH

SCALE

0 25'

CLAYTON ENVIRONMENTAL CONSULTANTS, INC.	FIGURE
Previous and Proposed Borehole and Monitoring Well Locations.	2
Stoody Company Clayton Project No. 32065.00	12/90





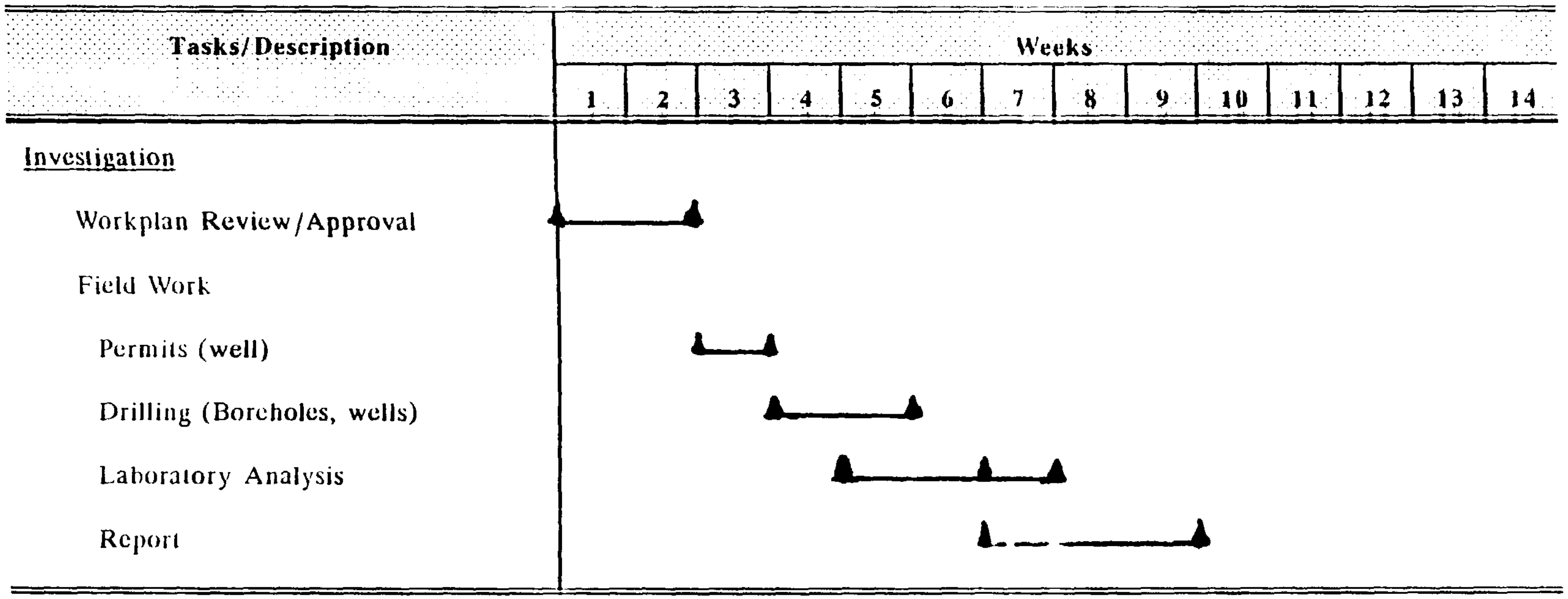
CLAYTON ENVIRONMENTAL CONSULTANTS, INC. | FIGURE

Previous and Proposed Borehole locations | 3

Stoody Company   Clayton Project No. 32065.00 | 12/90

FIGURE 4
PROPOSED PROJECT TIME SCHEDULE

STOODY COMPANY SUMP AND CLARIFIER INVESTIGATION



APPENDIX A

CRWQCB CORRESPONDENCE
DATED OCTOBER 22, 1990

STATE OF CALIFORNIA GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION

101 Centre Plaza Drive
Monterey Park, California 91754-2156
(213) 266-7500

October 22, 1990

Ms. Nicole Jafari
STOODY COMPANY
P.O. Box 1901
City of Industry, CA 91749-1901

WORK PLAN DIRECTIVE (FILE NO. AB105.263)

Board staff is in receipt of your soil assessment and clarifier investigation report. Review of soil analyses, along with quarterly ground water monitoring results indicate waste disposal practices at your site have impacted local ground water. Further investigation and remediation of subsurface conditions is necessary:

1) Analyses of soil samples obtained adjacent to the sump located in the barrel storage area detected high concentrations of volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH). Analysis of Board split samples obtained from SB-1 detected the following compounds:

	1'	10'
t-1,2-DCE	393 µg/kg	ND
c-1,2-DCE	3500 "	126 µg/kg
TCE	147 "	ND
1,1,2-TCA	ND	37 µg/kg
PCE	100 µg/kg	907 "
Toluene	73 "	ND
Chlorobenzene	17 "	ND
MIK	100 "	ND
TPH	4875 mg/kg	----

2) Sludge and soil samples obtained adjacent to the clarifier also showed high levels of VOCs and TPH. It must be assumed that the clarifier inlet/outlet piping is not sound, and unpermitted discharge continues.

You are therefore directed to submit to this Board a work plan to further define the extent of soil and groundwater contamination at your facility. The work plan must meet the enclosed requirements (Attachments 1 and 2--INITIAL and SUPPLEMENTARY SUBSURFACE ENGINEERING/GEOLOGIC SOIL INVESTIGATION), with the following modifications:

Ms. Nicole Jafari
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A. CLARIFIER AND SUMP INVESTIGATION/REMEDIATION

1) The clarifier must be emptied of all waste materials, steam cleaned, and inspected to determine where damaged. It must be either repaired, retro-fitted, or removed.

2) All underground pipework servicing the clarifier must be inspected to determine integrity. This may be conducted during excavation of contaminated soils.

3) All contaminated soils around the clarifier must be removed for disposal or remediation. Confirmatory sampling (sidewall and bottom) is required. Residual maximum concentrations of contaminants must meet the following criteria:

a) VOC levels must be less than ten times (10x's) State action levels or maximum contaminant levels (MCLs).
b) TPH levels must not exceed 10 ppm.

4) Obtain at least two soil samples for metals analyses. Analyze samples for soluble and total metal content for nickel, copper, and chromium VI.

5) Remediation/confirmation measures will be required adjacent to the sump located in the barrel storage area. Criteria for VOCs and TPH as stated in above section A.3. will apply.

B. ADDITIONAL GROUNDWATER INVESTIGATION REQUIREMENTS

1) One shallow groundwater monitoring well will be required. The well must be located immediately down-gradient of the clarifier.

2) Four inch diameter stainless steel well screens will be required. Use of PVC for casing material is acceptable.

3) Prior to purging of the new well, a ground water sample must be obtained for TPH analysis (EPA Method 418.1).

4) Continuation of the Stoody ground water monitoring program is required. All previous monitoring program requirements as discussed in August 21, 1989 Board correspondence still apply, with the following changes:

a) Analyze groundwater for VOCs using EPA Methods 502.1/503.1, 502.2, or 524.2.

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Page Three

b) If TPH is detected in the initial sampling of the well located adjacent to the clarifier, subsequent samplings of the well will require analysis for TPH.
c) The first monitoring/progress report will be required on **January 2, 1991**, with each successive reports due on the first of the month for each following quarter. An annual summary report will be due **October 1, 1991**.

Four copies of the work plan are due to Board staff by **December 3, 1990**. Please remember that the work plan should not be implemented until it has been approved by Board staff.

If you have any further questions, please contact Dainis Kleinbergs at (213)266-7530 and address all correspondence to his attention.

ROY R. SAKAIDA
Senior Water Resource
Control Engineer

RRS:dk

Enclosures

cc: Joe Viray, U.S. Environmental Protection Agency, Region 9
Bill Jones, Los Angeles County, Department of Health Services
Seiichi Saito, Los Angeles ~~County, Department~~ of ~~Health~~ Services, Environmental Management
Leon Directo, Los Angeles County, Sanitation District
Robert G. Berlien, Main San Gabriel Basin Watermaster
Tom Stetson, Stetson Engineering, Engineer for Main San Gabriel Basin Watermaster
Don Howard Engineering, Puente Basin Watermaster

STATE OF CALIFORNIA
California Regional Water Quality Control Board
Los Angeles Region

WORKPLAN REQUIREMENTS
for
INITIAL SUBSURFACE ENGINEERING/GEOLOGIC SOIL INVESTIGATION
(WELL INVESTIGATION PROGRAM)

The objective of this engineering/geological investigation is to evaluate potential waste discharges which may impact ground water. Your workplan should include, but not be limited to, the following:

SITE INFORMATION: Characterize past and present specific business activities. List any previous businesses at the site. Describe storage, handling, use, and disposal procedures for chemicals, primarily chlorinated organics or aromatic solvents. Give name, address, and phone number of any landlord/lessor.

FACILITY MAP: Identify on a scaled facility map all potential sources for contamination, past and present. Examples include: chemical and waste storage, transfer and use areas including tanks and piping, clarifiers, sumps, pits. Indicate dates of completion of buildings or pavings where possible.

SITE SOILS AND GEOLOGY: Determine if site discharges have entered the vadose zone, define sources, and provide background geological data for the area. Use EPA or State Department of Health Services guidelines.

1. Provide rationale for the number and location of borings. Plot on facility map.
2. Provide reasons for proposed depth of each boring if less than the generally required depth of 40 feet. Additional depths may be required if ground-water is encountered or if there is obvious contamination in the boring.
3. Identify proposed construction methods for borings.
4. Log all borings to provide characteristics of unconsolidated material per Unified Soil Classification System as well as all other appropriate information.
5. Provide a sampling plan to include equipment and procedures for collection and handling of geologic materials. A sampling interval of 5 feet, each change in lithology or changes in observed contamination is required starting at just below surface or surface covering.

6. Comply with chain of custody procedures. Discrete, undisturbed samples will be taken, sealed, and transported to the laboratory for analyses. Samples submitted for laboratory analyses are not to be used for field screening.
7. The proposed laboratory must be State Department of Health Services registered for each analytical procedure specified. EPA Methods 8260 or 8010/8020 are required. Supplement with Methods necessary for any site chemicals, past and present.
8. At a minimum, EPA sample holding times and conditions must be observed. However, samples held over seven (7) days may be suspect and not considered representative of site conditions.
9. EPA practical quantitation limits (5 to 10 $\mu g/kg$ for selected VOC) are required. Analytical results must indicate detection limits and whether a chemical potentially exists (trace).
10. Minimum laboratory QA/QC requirements include: field and reagent blanks, calibration check standards, matrix spiked duplicates, total recoverables, laboratory quality control sample.

GROUNDWATER (HYDROGEOLOGY): Ground water must be sampled if any boring encounters a saturated zone. Site specific exceptions may be made in consultation with Board staff.

1. Provide a contingency plan for conversion of borings that encounter saturated zones to ground water sampling wells. This should include permitting and well design, construction, and development specifications.
2. Provide protocols for field analysis, water sampling, handling and transport.
3. EPA Methods 601/602 or appropriate 500 Series Methods must be used plus any appropriate EPA Methods for nitrates and any other chemicals used on site.

ADDITIONAL REQUIREMENTS:

1. Submit a copy of the results of any previous subsurface investigations conducted at the site.
2. Submit a time schedule. The proposed activities must be completed within 6 to 8 weeks of plan approval.

3. A CALIFORNIA REGISTERED GEOLOGIST OR ENGINEER OR CERTIFIED ENGINEERING GEOLOGIST WITH FIVE YEARS SOILS OR HYDROGEOLOGIC EXPERIENCE SHALL DIRECTLY OVERSEE OR CONDUCT THESE INVESTIGATIONS AND PROPERLY SIGN OFF THE FINAL REPORT FOR THE REPORT TO BE ACCEPTED AND APPROVED.

4. Work shall not proceed without prior approval. Staff is to be notified at least one week prior to initiating field work to permit observation of field activities and to take split or duplicate samples.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

SUPPLEMENTARY ENGINEERING/GEOLOGIC SUBSURFACE INVESTIGATION (WELL INVESTIGATION PROGRAM)

DATA REQUIREMENTS: All requirements in the WORK PLAN REQUIREMENTS for INITIAL SUBSURFACE INVESTIGATIONS must be met in conducting this additional investigation.

UNSATURATED ZONE (SOILS)

1. Ascertain lateral and vertical extent of contamination.
2. Determine soil properties which affect contaminant mobility in the vadose zone. Relate the specific residual contaminants with their potential long term effect on ground water quality.

SATURATED ZONE (WATER)

1. Determine specific aquifer properties for correct siting of monitoring well(s). Use of piezometer clusters is encouraged to ascertain aquifer properties.
2. Determine lateral and vertical extent of contaminant plume.

PROCEDURES

SOIL BORING

1. Justify and plot location(s) for soil sampling.
2. Explain sampling depth and drilling method.
3. Have an appropriately registered or certified personnel sign off boring logs.

DRILLING/SOIL SAMPLING

1. Describe sampling procedures:
   - o Method and equipment used to collect the samples with minimal loss of volatiles.
   - o Sampling interval (5 feet or at significant changes in soil/lithology as noted on the boring logs).
   - o Number and type of soil samples (only discrete, undisturbed samples are acceptable).
2. Sample water from any boring which penetrates a saturated zone after converting to a monitoring well or piezometer.

MONITORING WELL CONSTRUCTION/DEVELOPMENT

1. Include in the well design, specifications and construction details such as:
   - o Casing and screen materials, screen length and placement with respect to water table etc.,
   - o Proposed depth and type of annular seal,
   - o Time for cement to set before commencing development.
2. Provide for appropriate logging by qualified personnel.
3. Characterize aquifer materials for proper selection of filter pack and screen. Only commercially slotted screens are acceptable. Less than 10-20% of the filter pack should enter the well.

4. The boring should not penetrate a competent clay layer below the saturated zone.
5. Casing must be suspended and centralized such that it is not resting against the sides nor bottom of the hole prior to fixing in place.
6. Place grout of either cement or cement/bentonite in an appropriate manner to avoid bridging.
7. Establish benchmarks relative to mean sea level. Provide benchmark location and survey date. Measure water levels to 0.01 foot. Also provide well location using UTM Coordinates.
8. Describe methods to develop well such that the waters sampled are representative of the formation water. The water sampled must have less than 10 ppm settleable solids.

WATER SAMPLING

1. Describe details of sample collection:
   o Water sampling devices to be used,
   o Procedures to minimize loss of samples by adsorption and/or volatilization,
   o Purge techniques, tests (temp., pH, conductivity) to assure the collection of a representative water sample.
2. Describe methods for handling the samples collected.

SAMPLE ANALYSES

GENERAL

1. The laboratory must be certified by the California Department of Health Services for the specific required procedures.
2. Laboratory procedures must be specified and QA\QC sheets must be submitted with the results in the technical report.
3. Limits of detection must meet EPA's practical quantitation limits.
4. Proper chain of custody procedures must be used.

SOILS: Specify EPA Methods to determine existing facility contaminants, also use the required EPA Methods 8260 or 8010/8020 to quantify volatile organics to EPA's practical quantitation limits. Specify detection limits.

WATER: Specify EPA Methods to quantify contaminants found in soil, also use EPA Methods 502.1/503.1, 502.2 or 524.2. Specify detection limits. Submit samples to the laboratory in unfiltered form and report sample turbidity.

REPORTS

Four copies of final reports should be submitted with all information requested.

rs4

APPENDIX B

SUBSURFACE SOIL INVESTIGATION AND INDUSTRIAL CLARIFIER REPORT FEBRUARY 28, 1990

Clayton Environmental Consultants, Inc.

P.O. Box 788 • 5736 Corporate Avenue • Cypress, California 90630 • (714) 229-4806

February 27, 1990

Clayton Project No. 27454.00

Ms. Nicole Jafari
STOODY COMPANY
16425 Gale Avenue
City of Industry, CA 91745

Subject: Subsurface Soil Investigation and Industrial Clarifier Report

Dear Ms. Jafari:

The enclosed report details the activities and results of the subsurface soil and clarifier investigation conducted at the Stoody facility on January 18 and 19, 1990.

No recommendations were made in the report text. As requested by Stoody, no conclusions were made from the laboratory results. Further interpretation and direction has been left to the California Regional Water Quality Control Board (CRWQCB). However, the CRWQCB is likely to request additional investigations.

As shown in the laboratory results section, various chemical compounds were detected in the soil at both the chemical barrel storage area and the industrial clarifier. Also, many of these compounds were detected at significant levels from the deepest samples (10 to 10.5 feet). This leaves the vertical extent of these compounds undefined in which case the CRWQCB will probably request additional and deeper boreholes, soil sampling, and possibly groundwater monitoring wells. The goal will be to define the vertical and lateral extent of these compounds. A clear understanding of this is necessary before recommendations can be made as to an appropriate remedial action (if any).

If you have any questions, please feel free to call me at (714) 229-4806.

Sincerely,

J. Eugene McNinch

Jesse E. McNinch
Associate Geologist

Reviewed by:

David H. Randell

David H. Randell, R.G.
Supervisor, Environmental Engineering
Pacific Operations

JEM/hly

cc: Dr. Jaswant Singh, Clayton

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Subsurface Soil Investigation and Industrial Clarifier Report for Stoody Company Industry, California

Clayton Project No. 27454.00
February 28, 1990

CONTENTS

EXECUTIVE SUMMARY

Clayton Environmental Consultants, Inc. was retained by the Stoody Company to develop and implement a subsurface soil and industrial clarifier investigation at their facility located at 16425 Gale Avenue in Industry, California. Two general areas were investigated at the Stoody Company facility on January 18 and 19, 1990. Three boreholes were drilled to a depth of 10 feet beneath the chemical waste barrel storage area and sampled at intervals of 1, 5, and 10 feet below ground surface. Two boreholes were drilled and sampled at 6.5 and 10.5 feet below ground surface adjacent to the industrial clarifier, and liquid and sludge samples were obtained from first stage of the clarifier.

Soil samples obtained from the chemical waste barrel storage area were analyzed for volatile organics using EPA Method 8240. Soil samples obtained near inlet and outlet piping of the clarifier were analyzed by EPA Method 8240 and 8015. The clarifier sludge was analyzed using a variety of tests including EPA Methods 8240 and 8015, flashpoint, pH, and California Title 22 metals. The clarifier liquid was analyzed for volatile organic compounds via EPA Method 624.

Laboratory analyses from soil samples taken from beneath the chemical waste barrel storage area report five volatile organic compounds detected above the detection limit.

Laboratory analyses from soil samples taken near the inlet and outlet piping of the clarifier reveal eight volatile organic compounds detected above the detection limit. The two organic volatile compounds reported within the clarifier (liquid and sludge) were also detected in the soil samples. In addition, waste oil was reported in both the clarifier sludge and the adjacent soil.

Visual inspection of the clarifier was performed following the removal of the contents and rinsing by the Nottingham Company of Southern California. The concrete interior appeared in good condition with no visible cracks.

Laboratory analysis of the clarifier sludge samples reported two detected volatile organic compounds and petroleum hydrocarbons. Various metals were detected, but none above total threshold limit concentrations (TTLC).

Subsurface Soil Investigation
and
Industrial Clarifier Report
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Stoody Company
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1.0 INTRODUCTION

The Stoody Company (Stoody), a Division of Stoody Deloro Stellite, Inc., is located at 16425 Gale Avenue in Industry, California. Stoody is a manufacturer of welding consumables (welding rods and wires) and specializes in die-cast, wear-resistant alloy parts. Stoody began operations on the site in 1976. Prior to that time, the area was used as farmland. Figure 1 shows the location of the Stoody facility.

In January 1990, Clayton Environmental Consultants, Inc. was retained by Stoody to sample from and visually inspect the industrial clarifier, and to assess subsurface soil conditions adjacent to the clarifier and in the chemical barrel storage area. Both tasks were designed to meet the requirements of the California Regional Water Quality Control Board, Los Angeles Region (CRWQCB) as outlined in their October 6, 1989 letter (File No. AB105.263) addressed to Mr. Hal Kahlen of Stoody (Appendix A).

On December 22, 1989 Clayton obtained approval of the vadose zone (subsurface) investigation and clarifier inspection workplan from Mr. Roy Sakaida of the CRWQCB (Appendix A). On January 18, and 19, 1990, Clayton conducted the field work as prescribed in the workplan dated November 16, 1989. The Nottingham Company of Southern California was contracted by the Stoody Company to remove and dispose of the contents of the clarifier as well as clean the clarifier interior. This report provides a description of field activities and laboratory analytical results from samples collected during that investigation.

2.0 OBJECTIVE

As outlined in CRWQCB correspondence, the first objective of the subsurface soil investigation was to examine the soil conditions near the industrial clarifier and at the chemical waste barrel storage area. The second objective was to sample the liquid and sludge contents of the clarifier and to assess its containment integrity through visual inspection of the interior and by analyzing soil samples from boreholes located adjacent to the clarifier.

The two areas of concern investigated during the field operations are shown in Figure 2 and are described as follows:

Chemical waste barrel storage area:

Asphalt-paved area in the northeast corner of the facility where barrels (55-gallon drums) containing waste oils and solvents used to be stored. Staining was noted by CRWQCB personnel on the asphalt beneath and adjacent to the barrels. In July, 1988, three boreholes were drilled in this area with one located in the drainage sump. Following the drilling and sampling, the drainage sump, which previously had an asphalt bottom, was filled with concrete.

Industrial Waste Clarifier:

Located outside, approximately 10 feet from the northeast corner of the building (Figure 2). As-built diagrams of the clarifier are provided in Appendix B. The floor and the interior walls are concrete. Effluent from the facility is carried to the clarifier through one main, buried pipe (approximately 6 inches in diameter) and two, surface PVC conduits which empty through holes in the metal cover.

3.0 FIELD ACTIVITIES

3.1 CHEMICAL WASTE BARREL STORAGE AREA

On January 18, 1990, a total of three soil boreholes were drilled at the site (SB-1, -2, and -3). These boreholes were located adjacent to the three boreholes drilled on July 21, 1988 (Figure 2). Present at the site during much of the field work were Ms. Nicole Jafari of Stoody and Mr. Dainis Kleinbergs from the CRWQCB.

The boreholes were vertically drilled using a 3-inch outside-diameter, stainless-steel hand auger. Driven soil samples were collected with a 1-1/2-inch diameter hand driven slide hammer at 1, 5, and 10-foot intervals. Brass tubes (1-1/2-inch by 6-inch) were used to collect each sample. The workplan (October 16, 1989 Project Number 26496.00) originally called for use of a modified California split-barrel sampler with 6-inch, 2.5-inch outside diameter brass tubes, but because of the shallow sampling depth and the ability to acquire relatively undisturbed samples, and the proximity of the sampling to underground piping, the slide hammer was employed. Immediately after sampling, the brass sample tubes were removed from the slide hammer sampler. Considerable effort was exerted to minimize sample headspace within the brass cylinders. Aluminum foil was pressed into the end of the brass tubes, when the soil was not flush with the cylinder edge.

The ends of the tubes were covered with aluminum foil and polyethylene caps. The caps were sealed to each end of the cylinder with Scotch 33+ electrical tape. Samples were then labeled, placed in self-sealing plastic bags, and stored under Blue-Ice™ in a portable ice chest for delivery to Clayton's state-certified laboratory, following standard chain-of-custody procedures. Additional duplicate samples were collected at the request of Mr. Dainis Kleinbergs for CRWQCB purposes, in the same manner described above.

The stainless steel hand auger and the slide hammer head were washed in a trisodium phosphate solution, rinsed twice in tap water, and then rinsed in deionized water between the collection of each sample.

Prior to collecting each sample, soil from the hand auger (taken from just above the sample depth) was placed in a self-sealing plastic bag and allowed to volatilize. These bagged samples were subjected to field headspace analysis via the use of a photoionization detector (PID) after being allowed to volatilize for at least 20 minutes. Soil cuttings from the hand auger were also used by a Clayton geologist to log each borehole. Results of the PID analyses are included on the borehole logs (Appendix C).

When the soil sampling was completed, each borehole was re-filled with their respective soil cuttings and capped with cement. No obvious soil discoloration or odors were noted in the soil cuttings.

3.2 INDUSTRIAL WASTE CLARIFIER

3.2.1 Sludge and Liquid Sample Collection

On January 19, 1990, Clayton field personnel collected samples of the sludge and liquid contained in the industrial clarifier. A Los Angeles County Sanitation District (LACSD) inspector was onsite during the liquid sample collection, also present were Mr. Dainis Kleinbergs and Ms. Nicole Jafari. The liquid sample was obtained from the first stage of the clarifier near the inlet pipe using a pre-cleaned LACSD stainless steel pail, and placed in two glass 40-milliliter VOA bottles with Teflon™-lined lids. Nottingham Company then pumped the liquid out of the clarifier, exposing the bottom sludge. The sludge sample was obtained from the first stage with a pre-cleaned half-liter glass jar by taping the jar to a metal rod and dipping up a sample from near the clarifier bottom. The sludge was then poured into four, half-liter glass jars and sealed with Teflon™-lined lids. The samples were labeled and wrapped with styrofoam™ sheeting to minimize the potential for damage during shipping. They were then placed under Blue-Ice™ in a portable cooler for delivery to Clayton's state-certified laboratory, following standard chain-of-custody procedures.

3.2.2 Visual Inspection

Following sampling and removal of the clarifier contents, the clarifier was cleaned, using water and a high-pressure hose. The cleaning and visual inspection were performed from the surface opening. No attempt was made to enter the clarifier. The walls and all the joints between each side and the bottom appeared smooth and in good condition. The bottom in the first and second stage was smooth with no cracks or scaling evident. No cracks were observed on the bottom of the third stage but it was noted that the surface was rough in certain areas, appearing as if a tar-like substance had hardened to the surface.

3.2.3 Soil Sampling

On January 19, 1990, following the clarifier inspection, two boreholes were drilled to a depth of 10.5 feet. One was located adjacent to the inlet piping (SB-5) and the other next to the outlet piping (SB-4). The boreholes were vertically drilled using a 3-inch outside diameter stainless steel hand auger. Driven soil samples were collected with a 1-1/2-inch hand-driven slide hammer at depths of 6.5 and 10.5 feet. Brass cylinders (1-1/2-inch by 6-inch) were used to collect each sample. The workplan (October 16, 1989 Project Number

26496.00) described a method of hand augering and simply transferring the soil from the hand auger cylinder to 6-inch, 2.5-inch outside diameter brass tubes. However, the slide hammer was used to minimize the loss of volatile constituents. After the sample collection, the ends of the tubes were covered with aluminum foil and polyethylene caps. The caps were sealed to each end of the cylinder with Scotch 33+ electrical tape. Samples were then labeled, placed in a self-sealing plastic bag, and stored under Blue-Ice™ in a portable ice chest for delivery to Clayton's state-certified laboratory, following standard chain-of-custody procedures.

Prior to collecting each sample, soil (taken from just above the sample depth) from the hand auger was placed in a self-sealing plastic bag and allowed to volatilize. These bagged samples were subjected to field headspace analysis via the use of a photoionization detector (PID) after being allowed to volatilize for a least 20 minutes. Volatile organic compounds were detected by headspace analysis using the PID at 10.5 feet below ground surface at SB-4 and SB-5. Results of the PID analyses are indicated on the borehole logs (Appendix C). Soil cuttings from the hand auger were also used by a Clayton geologist to log each borehole. When the sampling was completed, each borehole was partially re-filled with their respective cuttings (that showed no detection from the PID and were not obviously discolored) and capped with cement.

4.0 LABORATORY ANALYSIS

Laboratory analytical methods were dictated by the CRWQCB in the aforementioned October 6, 1989 letter to Stoody. Soil samples obtained from the chemical waste barrel storage area were analyzed for volatile organics using U.S. Environmental Protection Agency (EPA) Method 8240. These samples were shipped to Clayton's state-certified laboratory located in Pleasanton, California. The chain-of-custody form and laboratory analysis reports are included in Appendix D.

Analyses associated with the industrial clarifier are as follows:

The clarifier sludge was analyzed for volatile organic compounds and petroleum hydrocarbons using EPA Method 8240 and 8015, respectively, and flash point, pH, and California Title 22 metals. The clarifier liquid was analyzed for volatile organic compounds via EPA Method 624.

Samples from the adjacent soil boreholes were analyzed for both volatile organic compounds and petroleum hydrocarbons using EPA Methods 8240 and 8015, respectively. EPA Method 8015 was extended or modified to identify the heavier hydrocarbons (diesel, waste oil) in both the clarifier sludge and the adjacent soil samples. These samples were also shipped to Clayton's state-certified laboratory in Pleasanton, California. The soil samples were analyzed within 7 days of sampling as requested by the CRWQCB. Chain-of-custody forms and laboratory analysis reports are included in Appendix D. Also, as requested by CRWQCB, the chromatograms for total petroleum hydrocarbons by EPA 8015 are enclosed in Appendix E.

4.1 CHEMICAL WASTE BARREL STORAGE AREA: SOIL SAMPLES

Three boreholes (SB-1, SB-2, SB-3) were drilled to characterize the soil conditions in the chemical waste barrel storage area. Samples were collected from 1, 5, and 10 feet below ground surface. Tetrachloroethene was detected in samples from the three boreholes at concentrations ranging from 160 to 8 micrograms per kilogram (ug/kg) and showed a trend of decreasing with increased depth. Trans-1,2-dichloroethene was detected in SB-1 and ranged in concentrations from 700 to 14 ug/kg, with a similar trend of decreasing with depth. Trichloroethene (5 ug/kg) was also detected in SB-1 at the 10-foot sampling interval. Toluene and benzene were measured at 4 ug/kg and 2 ug/kg, respectively in SB-3 at the 10-foot sampling depth. These results are summarized in Table 1.

4.2 INDUSTRIAL WASTE CLARIFIER: LIQUID AND SLUDGE SAMPLES

Toluene was detected at 640 milligram per liter (mg/l) from the liquid sample taken from the first stage of the clarifier. In addition, 0.8 mg/kg trans-1,2-dichloroethene, 5.0 mg/kg toluene, 1,000 mg/kg diesel, and 8,000 mg/kg waste oil were reported in the sludge. Laboratory results of organic compounds are shown in Table 2. The sludge pH was measured at 7.6, and the ignitability was greater than 200 degrees Fahrenheit. Inorganic constituents detected above the detection limits in the clarifier sludge are as follows: arsenic, barium, cadmium, chromium, cobalt, copper, mercury, molybdenum, nickel, silver, vanadium, and zinc. The concentrations of the inorganic constituents measured from the clarifier sludge samples are summarized in Table 3.

4.3 INDUSTRIAL WASTE CLARIFIER: SOIL SAMPLES

Boreholes SB-4 and SB-5 were drilled to characterize the soil conditions immediately beneath the clarifier outlet and inlet piping, respectively. Samples were taken at approximately 1 and 5 feet below the inlet and outlet piping at 6.5 and 10.5 feet below ground surface. The following compounds were detected in both boreholes: tetrachloroethene, toluene, trichloroethene, ethylbenzene, total xylenes, and acetone. 2-Butanone and trans-1,2-dichloroethene were only detected at SB-5. Samples from SB-4 reveal 150 milligrams per kilogram (mg/kg) of waste oil 1 foot below the outlet piping, and 3,700 mg/kg of waste oil 5 feet beneath the outlet piping. Samples beneath the inlet piping (SB-5) report 1,000 mg/kg and 5,000 mg/kg of waste oil at 6.5 and 10.5 feet below ground surface, respectively. The concentrations and distribution of the detected compounds are shown in Table 2.

5.0 CONCLUSIONS

Three soil boreholes were drilled in the chemical barrel storage area to a depth of 10 feet below ground surface. Soil samples were collected from each borehole and subjected to laboratory analysis using EPA Method 8240. Five volatile organic compounds were detected. The two chemical compounds which were measured at the highest concentration (tetrachloroethene, trans-1,2-dichloroethene) decreased with depth.

Two soil boreholes were drilled adjacent to the industrial clarifier, beneath the inlet and outlet piping, to a depth of 10.5 feet below ground surface. Soil samples were obtained from each borehole and subjected to laboratory analysis using EPA Method 8240 and 8015 modified. Eight volatile organic compounds were detected from EPA Method 8240. Waste oil was detected from EPA Method 8015 modified in both boreholes.

One liquid and one sludge sample was collected from the first stage of the clarifier before cleaning by the Nottingham Company. A variety of laboratory analyses were performed on the clarifier sludge in order to determine if it was hazardous waste. Total threshold limit concentrations established in California Title 22 regulations were not exceeded by any of the 18 tested metals. The corrosivity and ignitability of the sludge were addressed by pH and flash point, respectively, and found to be within established limits (California Title 22).

Laboratory analysis using EPA Methods 8240 and 8015 modified on the contents of the clarifier (liquid and sludge) and the adjacent soil both report the detection of three compounds, trans-1,2-dichloroethene, toluene, and waste oil.

The visual inspection of the clarifier interior revealed no obvious points of leakage and appeared in relatively good condition.

This report submitted by: ______________________
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This report approved by: ______________________
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February 13, 1990